



## Minimum Requirements: Borehole Pump Installation

### 1. CABLE SIZING

Cable sizes **MUST** be based on the distance between the supply entry point (transformer) and the motor. See Franklin's cable selection chart or consult the cable manufacturer. Tie the cable to the rising main.

### 2. EARTHING

Use an insulated earth wire, one size larger than the drop cable. Connect to the fourth wire of the motor lead out cable and MOV type arrestors. Arrestors **MUST** be installed as close to the motor (top of the borehole) as possible.

### 3. PRESSURE GAUGE

Preferably with drag pointer to indicate the presence of water hammer.

### 4. NON-RETURN VALVE

Surface non-return valves are optional.

### 5. REGULATING VALVE

A suitable control type valve, preferably one size smaller than the pipeline, is strongly recommended.

### 6. WATERHAMMER

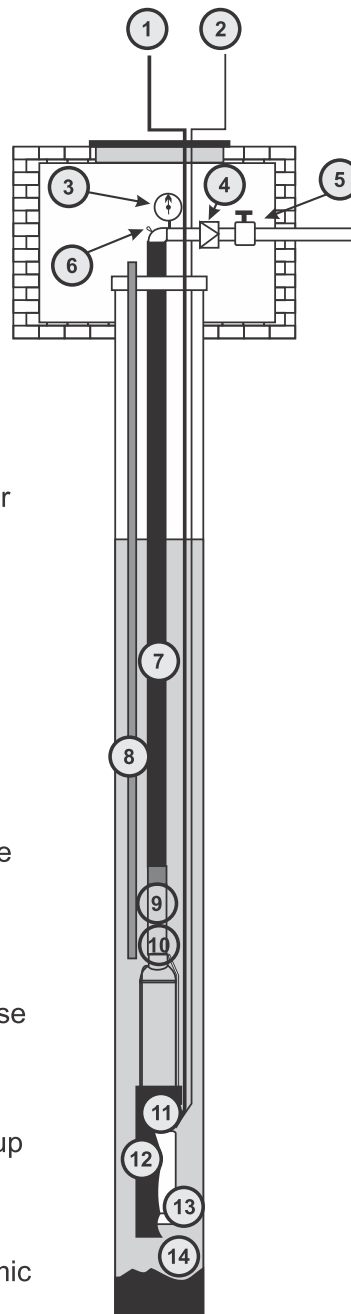
If surface valves are installed, a vacuum breaker must be fitted. Shrader (tyre valve) or brass check valve can be used. Air-release valve is **NOT** acceptable.

### 7. UP-THRUSTING

For boreholes with high static water levels, upthrusting on start-up can be minimised by using a small size rising main.

### 8. LEVEL MEASUREMENT

Dipper tube (open at the bottom) for measuring static and dynamic water levels. Tie the tube to the rising main.



### 9. CORROSION CONTROL

½ to 1 metre of screwed and socketed galvanized pipe. Connect the pipe to the motor with a stainless steel or min 6mm copper conductor. A flow inducer sleeve **MUST** be fitted. **Cover the top and bottom circumferential welds with a resin impregnated shrink sleeve or mastic tape.**

### 10. NON-RETURN VALVE

**A FULLY OPERATIONAL** non-return valve must be installed at the discharge of the pump.

### 11. COUPLING AND SPLINE LUBRICATION

The pump coupling must be fitted with a good quality water resistant grease e.g. **SHELL ALVANIA WR**. Rotate the coupling while joining the motor to the pump.

### 12. INDUCER SLEEVE

An inducer sleeve **MUST** be fitted if the pump is installed below the main inflow point or if this is unknown.

### 13. MOTOR PROTECTION

Motor protection must open the circuit within 10 seconds of a locked rotor, single phasing or dry running condition occurring. Use **SUBTRONIC DATA 120 INTELLIGENT PUMP MANAGEMENT SYSTEMS**.

### 14. PREVENTING INGRESS OF SAND AND SILT

Pump and motor must be installed a minimum of 5m from start or sediment or borehole bottom.

1. Pump duty point must always fall within the middle third of the pump's operating curve.
2. Pressure surges must be prevented using appropriate valves and reticulation design.
3. Do not exceed the maximum number of starts per hour as shown in Franklin Electric's installation manual.
4. All electrical control apparatus must be in good working condition. Regular checks should be made for loose connections and burnt contactor points.
5. Prolonged operation against a closed or partially open valve must be avoided.
6. All single phase Franklin motors have built-in surge arrestors.